

The Arctic Observing Summit 2013

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The Arctic Observing Summit (AOS) was initiated in 2013 as a high-level international forum to provide community-driven, science-based guidance for the design and implementation of a sustained, comprehensive, and integrated Arctic observing system. The biennial summits target scientists, managers, stakeholders, agencies, Arctic community members, and the private sector across all levels, from local to international. The AOS is a Sustaining Arctic Observing Networks (SAON) task led by the International Study of Arctic Change (ISAC).

The inaugural Arctic Observing Summit was held in Vancouver, British Columbia, Canada, from 30 April to 2 May 2013. In preparation for that meeting, AOS participants and members of the research community provided input and perspectives on specific themes related to the design, implementation, and utility of an adaptive Arctic observing system. To capture and integrate input from a broad range of participants, the AOS encouraged contributions of community-based white papers and statements. This activity continues and will form a part of AOS 2016, to be held in Fairbanks, Alaska. Building on this input and stemming from the AOS white papers, a thematic cluster of papers was selected for publication in this special issue of *Arctic*. The resulting collection includes both peer-reviewed scientific articles and reports that address AOS themes such as the following:

1. Status of the current observing system (goals, objectives, capabilities, challenges, and sustainability);
2. Observing system design and coordination (including integration of components and implementation);
3. Stakeholder perspectives on observing system design, needs, and integration;
4. Mechanisms for coordinating the support, implementation, and operation of a sustained Arctic observing system.

These themes were broadly defined to encompass diverse perspectives and topical areas. Authors of the articles and reports were encouraged to articulate and explore underlying questions:

1. What can be done to improve the design, implementation, coordination, and sustained long-term operation of Arctic observing systems in the focus area of a given white paper?
2. Are Arctic observations shared optimally today among communities (e.g., among scientists, governments, and stakeholders)?
3. Are there specific hindrances to the collection or sharing of Arctic observations in the focus area of a given paper (e.g., restrictions due to military strategic reasons, protection of natural resources, or issues with interoperability or access to data)?

The original AOS 2013 white papers have served as a foundation for dialogue and motivated exploration of emerging opportunities to build a robust, collaborative, and sustained Arctic observing system. The articles explore the needs of an observing system, novel ideas, technological advances, and specific focus areas that offer promising avenues for future development and implementation. Thus, the articles collected in this special issue provide insight into some possible directions in which the Arctic observing system might evolve, and the challenges it might face in getting there. Future AOS summits, to be held every two years in conjunction with the International Arctic Science Committee's Arctic Science Summit Week, will build on the foundation established by this inaugural meeting, augmented by continued input in the form of white papers and other contributions provided by all sectors.

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